

REMARKS

This application has been reviewed in light of the Office Action mailed on July 21, 2003. Claims 1-5, 16-21 and 36-44 are pending in the application with Claims 1, 16, 36 and 41 being in independent form. By the present amendment, Claims 1-5, 16, 36, 41 and 42 have been amended. No new matter or issues are believed to be introduced by the amendments.

In the Office Action, at paragraph one, it is stated that the amendment filed on June 5, 2001 canceled Claims 6-15 and 16-21 and added Claims 36-44. Applicants respectfully submit that this amendment canceled Claims 6-15 and 22-35 (not Claims 16-21) and added Claims 36-44.

Applicants gratefully acknowledge the allowance of Claims 2-5, 19-21 and 44 if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Office Action states the following reasons for the indication of the allowable subject matter: "the prior art of record fails to teach or fairly suggest to one of ordinary skill in the art producing a signal related to weight of an object as a result of the imaging of the object as in claim 2, measuring an edge discontinuity between the edge of the platform and an edge of a counter surface as in claim 19, and measuring the movement of the weighting platform from image data relating to indicia marked on the platform as in claim 44."

I. Rejection of Claim 1 Under 35 U.S.C. §102(e)

Claim 1 was rejected under 35 U.S.C. §102(e) over U.S. Pat. No. 6,064,629 issued to Stringer et al. ("Stringer et al.").

Applicants have amended independent Claim 1 to include language indicative of the limitation which the Office Action states is not taught or fairly suggested to one of ordinary skill in the art, i.e., producing a signal related to weight of an object as a result of the imaging of the object. The language added to Claim 1 is not disclosed or suggested by Stringer et al. That is, Stringer et al. does not disclose or suggest “producing a signal related in value to the weight of the object from the image data received from the image sensor,” as recited by Applicants’ Claim 1. In fact, Stringer et al. does not even disclose or suggest the imaging of objects. Accordingly, withdrawal of the rejection with respect to Claim 1 under 35 U.S.C. §102(e) and allowance thereof are respectfully requested.

II. Rejection of Claims 16 and 17 Under 5 U.S.C. §102(e)

Claims 16 and 17 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,137,577 issued to Woodworth (“Woodworth”). Independent Claim 16 has been amended in a manner which is believed to better define Applicants’ invention and to overcome the rejection.

Claim 16 recites:

An apparatus for detecting optical codes on a target object and one or more physical parameters of the target object comprising:

an image sensor for producing electronic signals corresponding to at least one frame of a two dimensional array of pixel information for a field of view containing the target object;

means for projecting a pattern onto the field of view of the image sensor; and

means for reading an optical code in the field of view of the image sensor and for determining a physical parameter of the target object from at least one frame having an image representing the reflection of the pattern from the target object onto the image sensor. (Emphasis added)

Woodworth discloses a method and apparatus for measuring the length, width and height of rectangular solid objects moving on a conveyor. The apparatus includes a light curtain, two laser triangulation range finders, and a pulse tachometer mounted on a frame around a conveyor. As an object is conveyed through the frame by the conveyor, measurements continuously obtained from each of the sensors are correlated by a digital computer to estimate the length, width and height of the object.

In contrast to Applicants' invention as recited by Claim 16, as understood by the Applicants, the apparatus disclosed by Woodworth requires a plurality of imaging frames captured by the two laser triangulation range finders, each including a respective camera, for the measurement of a physical parameter of the object. The imaging frames are captured as the object moves through the frame mounted around the conveyor (see FIGs. 1-7). (Emphasis added)

Woodworth does not disclose or suggest means for determining a physical parameter of a target object from at least one frame having an image representing the reflection of a pattern from a target object onto an image sensor, as recited by Applicants' Claim 16. (Emphasis added)

Therefore, it is believed that Claim 16 is patentably distinct over the prior art reference and accordingly, withdrawal of the rejection with respect to Claim 16 under 35 U.S.C. §102(e) over Woodworth and allowance thereof are respectfully requested.

Claim 17 depends from independent Claim 16 and thus is limited by the language recited by this independent claim. Accordingly, for at least the reasons given above for Claim 16, withdrawal of the rejection with respect to Claim 17 under 35 U.S.C. §102(e) over Woodworth and allowance thereof are respectfully requested.

III. Rejection of Claims 18 and 36-43 Under 5 U.S.C. §103(a)

Claims 18 and 36-43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Woodworth in view of Stringer et al. Independent Claims 36 and 41 have been amended in a manner which is believed to better define Applicants' invention and to overcome the rejection.

Claim 36 recites:

An imaging system for measuring an orthogonal dimension of a rectangular solid object in a field of view of an imager, comprising:

means for obtaining pixel information corresponding to at least one frame of the field of view of the imager;

means for determining a distance between the object and the imager using the pixel information;

means for determining the angles between edges of the rectangular solid object meeting at a corner of the object, determining an imaged length of at least one of the edges of the rectangular solid object and scaling the determined image length of the at least one edge responsive to the determined angles and determined distance between the rectangular solid object and the imager to obtain an approximation of the actual length of said at least one edge of the rectangular solid object. (Emphasis added)

Woodworth does not disclose or suggest determining a distance between an object and one of the cameras 70, 72 (analogous to Applicants' imager) using pixel information corresponding to at least one frame of the field of view of one of the cameras 70, 72. In the apparatus disclosed by Woodworth, multiple image frames of the object are obtained by the

cameras 70, 72 as the object passes through the frame mounted to the conveyor. Thus, as recited by Applicants' Claim 36, Woodworth does not disclose or suggest means for obtaining pixel information corresponding to at least one frame of the field of view of the imager, let alone, using the pixel information corresponding to the at least one frame for determining a distance between the object and the imager, as further recited by Applicants' Claim 36.

Stringer et al. does not cure the deficiencies of Woodworth. The apparatus disclosed by Stringer et al. does not include an imager, let alone, means for obtaining pixel information corresponding to at least one frame of the field of view of the imager and means for determining a distance between an object and the imager using the pixel information, as recited by Applicants' Claim 36.

Applicants' Claim 41 has been amended to include similar language as the language added to Claim 36. In particular, Applicants' Claim 41 recites in part: "an electronic processor receiving image information from the image sensor for detecting and decoding an optical code in the field of view of the image sensor and for producing a signal related in value to the dimension of the one or more features in the field of view based on image information relating to at least a portion of the projected pattern, wherein said image information corresponds to at least one frame of the field of view." (Emphasis added) Accordingly, the same arguments presented above for Claim 36 apply to Claim 41 as well.

Therefore, it is believed that Claims 36 and 41 are patentably distinct over the prior art references and accordingly, withdrawal of the rejection with respect to Claims 36 and 43 under

35 U.S.C. §103(a) over Woodworth in view of Stringer et al. and allowance thereof are respectfully requested.

Claims 18, 37-40, 42 and 43 depend from independent Claims 16, 36 and 42 and thus are limited by the language recited by these independent claims. Accordingly, for at least the reasons given above for Claims 16, 36 and 41, withdrawal of the rejection with respect to Claims 18, 37-40, 42 and 43 under 35 U.S.C. §103(a) over Woodworth in view of Stringer et al. and allowance thereof are respectfully requested.

IV. Conclusions

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-5, 16-21 and 36-44, are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Applicants' undersigned attorney at the number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "George Likourezos", written over a horizontal line.

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